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Case Report

Successful retrieval of a dislodged paclitaxel-eluting coronary stent in the abdominal aorta using a Günther Tulip Vena Cava MReye Filter Retrieval Set

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Summary Although the incidence of stent dislodgement has gradually decreased, dislodgement is still a potential cause of serious complications if it happens. We report a case of complicated dislodgement of a paclitaxel-eluting coronary stent during percutaneous coronary intervention and the successful retrieval in the abdominal aorta using a Günther Tulip Vena Cava MReye Filter Retrieval Set, which was inserted from the right femoral artery. This retrieval set has a unique curve loop that was useful to retrieve the dislodged stent in the abdominal aorta.

Introduction

The recent progress of percutaneous coronary intervention (PCI) has been remarkable and coronary stenting has become widely employed because of its usefulness in occlusive dissection or suboptimal dilation after balloon angioplasty, and its low restenosis rate. However, some complications are still unavoidable. The incidence of stent dislodgement, which is one of the acute phase complications of PCI, may be decreasing by the technological advances regarding pre-mounted stents. However, the risk of serious complications such as death, embolization, and need for an emergency operation, persists [1—3]. We report a case of complicated dislodgement of a paclitaxel-eluting coronary stent during PCI and the successful retrieval in the abdominal aorta using a Günther Tulip Vena Cava MReye Filter Retrieval Set (William Cook Europe ApS, Bjaeverskov, Denmark).

Case report

A 60-year-old man was admitted to our hospital because of sudden onset of chest pain 2 h earlier. He had a blood pressure of 185/100 mmHg and regular pulse of 60 beats per minute. The electrocardiogram showed ST elevation in leads I, aVL, and V2 to V6. Echocardiography revealed reduced anterior wall motion. Blood examination was normal except for a white blood cell count of 12440/μL. He was diagnosed as having acute coronary syndrome and was subjected to emergency cardiac catheterization and PCI.

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Figure 1 Coronary arteriogram showing severe stenosis at the large diagonal branch.

Coronary arteriography showed 90% stenosis at the large diagonal branch (Fig. 1). A 6Fr guiding catheter (Radiguide II JL4.0, Terumo, Tokyo, Japan) was engaged through the right brachial artery, and a guide wire (Athlete GT soft, Japan Lifeline Co., Ltd., Tokyo, Japan) was passed through the lesion. We tried direct paclitaxel-eluting coronary stenting but the stent could not be crossed through the lesion. During this procedure, the guiding catheter and all the PCI system came off because the lesion was tough and we had to push hard. At that time, the dislodged paclitaxel-eluting stent was detected in the left ventricle. Thereafter, the dislodged stent moved into the abdominal aorta due to patient's coughing.

We obtained written informed consent before PCI including emergency cardiac operation if serious complication might happen. During this procedure, we also obtained orally informed consent from this patient about the emergency retrieval of dislodged stent. An 8Fr sheath was inserted from the right femoral artery to retrieve the stent. The dislodged stent was hanging on the aortic wall by one end, and the other end was floating in the blood stream. We thought that the Günther Tulip Vena Cava MReye Filter Retrieval Set, which has a unique curve loop (V shape), could be useful to catch the floating end of the stent. Thus, we inserted the retrieval set and guided it carefully through the 8Fr sheath close to the stent while checking the position in two X-ray projections so that the V shape loop faced exactly the floating end of the dislodged stent (Fig. 2a). When the floating end of the stent stopped moving, it was judged that the stent had been held (Fig. 2b—d). The stent was bent and kept in the 8Fr sheath, then the dislodged stent was retrieved (Fig. 3). Another stent was successfully implanted in the target coronary artery lesion after sufficient predilation using a balloon.

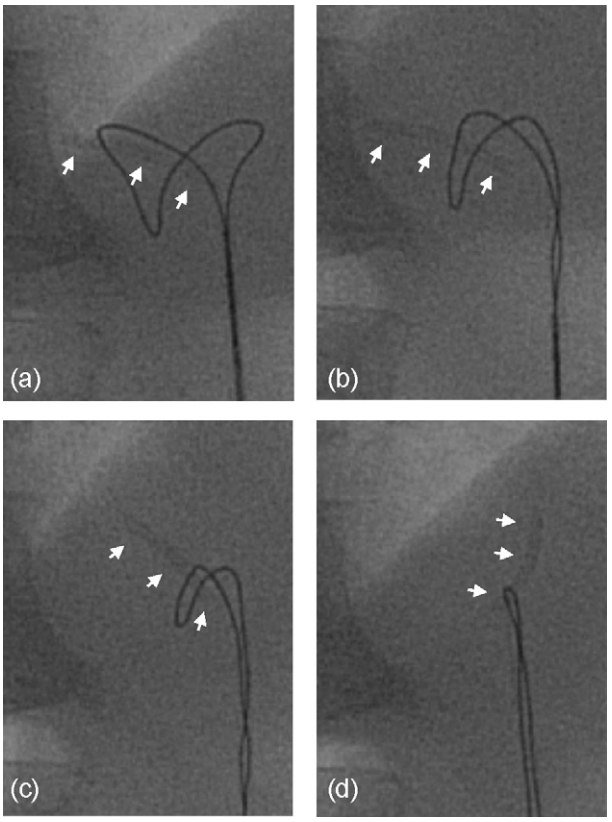

Figure 2 The dislodged paclitaxel-eluting stent was detected in the abdominal aorta. The Günther Tulip Vena Cava MReye Filter Retrieval Set is seen facing the floating end of the dislodged stent (a). The dislodged stent was successfully retrieved (b—d).

Discussion

Stent dislodgement is a rare complication that has been reported in 0.32—8.4% of PCI procedures [1—3]. However, technological advances regarding pre-mounted stents and the frequent use of PCI at present might have influenced this incidence. Brilakis et al. [3] reported that the annual incidence of stent loss during PCI in a single center increased from 1994 to 1997, but subsequently declined. However, stent dislodgement is still a potential cause of serious complications such as death, embolization, and need for an emergency operation [1—3].

A previous report mentioned significant proximal angulation and calcified lesions as having a high risk of stent dislodgement [3]. In our patient, there was neither significant proximal angulation nor calcification. However, after retrieval of the dislodged stent, relatively high balloon pressure was needed to obtain sufficient dilation before the second stent implantation. The lesion was probably harder than it was expected from angiographical findings.

There have been some reports on retrieval methods [1,2]. Small-balloon technique is often used when the dislodged stent remains on the guide wire in the coronary artery; a low-profile balloon is advanced through the dislodged stent and is drawn with the stent after inflating at low pressure. Another method uses two guide wires;

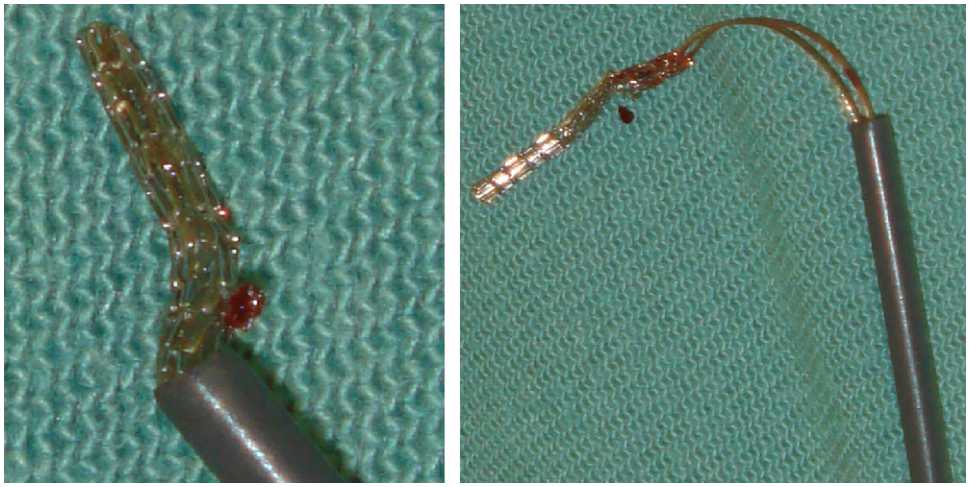

Figure 3 The retrieved stent.

a second guide wire is inserted and twisted around the first guide wire to trap the stent. A loop snare is also available.

In successful cases of stent retrieval from the aorta, a biopsy forceps [4] or a loop basket intravascular retriever set [5] were used. In our patient, the guiding catheter and all the PCI system came off because we had to push the stent hard into the tough lesion, and in the end the dislodged stent migrated to the abdominal aorta. We used a Günther Tulip Vena Cava MReye Filter Retrieval Set because we did not have another large size snare. The Günther Tulip Vena Cava Filter is a retrievable filter that is intended to be placed in the inferior vena cava for the prevention of recurrent pulmonary embolism from deep vein thrombosis. Its' retrieval set has a unique V shape loop intended to engage a hook of the filter. In this case, it might also be more suitable and useful to catch the floating end of the stent than a simple loop, and the retrieval technique itself was easy.

Similar to this case of a dislodged paclitaxel-eluting stent, there were some reports in the drug-eluting stent era [6,7]. It seems that the high-risk lesion and dislodgement pattern are similar to the cases of bare metal stent dislodgement. However, Roffi et al. [7] retrospectively analyzed 1415 consecutive cases of PCI, and reported that the incidence of damaged or lost undeployed stents was higher with paclitaxel-eluting stents than with sirolimus-eluting stents or bare metal stents. In the report by Brilakis et al. [3], as mentioned above, the annual incidence was very low (0—0.2%) from 2000 to 2002, while in 2003 it slightly increased to 0.3%. The possibility of a new increase of the frequency of stent dislodgement must be noted because of the wide applicability of PCI.

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